Source Water Assessment Program (SWAP) Report
For
D & M CHU TECHNOLOGY, INC. (Draft)

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date DRAFT Prepared:
January 15, 2002

Table 1: Public Water System (PWS) Information

PWS NAME	D & M CHU TECHNOLOGY, INC.
PWS Address	WHITCOMB AVE.
City/Town	BOXBORO
PWS ID Number	2037025
Local Contact	DEBORAH BRAY
Phone Number	(978) 486-3395

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	2037025-01G	146	445	Moderate
Well #2	2037025-02G	100	445	Moderate

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? inventory land uses within the recharge areas of all public water supply sources;
? assess the susceptibility of drinking water sources to contamination from these land uses; and
? publicize the results to provide support for improved protection.

Maintaining Your Good Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description Of The Water System

The facility gets its water supply from two wells. The wells are located close to the intersection of Boxboro, Harvard and Littleton and the wells are not interconnected. Well #1 is an 80 foot deep bedrock well. It feeds the front building (building closest to the street), which is vacant, and has been for a while. Well #1 has a Zone I of 146 feet and an Interim Wellhead Protection Area (IWPA) of 445 feet. Well #2 (02G) is a 100 foot deep rockwell and it feeds the rear building, which is occupied. Well #2 has a Zone 1 of 146 feet, feet and an Interim Wellhead Protection Area (IWPA) of 445 feet. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.

- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

The well serving the facility has no treatment at this time. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1.

Future Considerations
Due to the length of time that Well #1 has been inactive, it is possible that the New Source Approval process may be required prior to activation of the well. Should this be required, the Department also recommends that consideration also be given to interconnecting the two distribution systems to avoid redundancy.

2. Discussion Of Land Uses In The Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.
Key issues include:

1. **Inappropriate activities in Zone Is;**
2. **Septic system within the IWPA; and**
3. **Hazardous waste storage.**

The overall ranking of susceptibility to contamination for the well is moderate based on the presence of at least one moderate threat land use or activity in the IWPA.

1. **Zone Is** - Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone Is contains the on-site buildings, roads, and parking areas. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.
   Recommendations:

✓ Keep non-water supply activities out of the Zone
✓ Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
✓ If the facility intends to continue utilizing the structures and parking areas in the Zone I, use BMPs and restrict activities that could pose a threat to the water supply.

2. **Septic system** - The septic system is located within the IWPA of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.

Table 2: Table of Activities within the Water Supply Protection Areas

Facility Type	Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
	Storage and use of hazardous materials	No	Both wells	Moderate	
	Parking lot, driveways & roads	Both wells	Both wells	Moderate	Limit road salt usage and provide drainage away from wells
	Septic System	No	Well #1	Moderate	See septic systems brochure in the appendix
	Fuel Storage Above Ground	No	Both wells	Moderate	Two AST
	Structure	Yes	Yes	- - - - -	Non-water supply structures in Zone I

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.

3. **Hazardous material storage** - Hazardous materials are stored within the IWPA of both wells. The storage area is properly marked, the area is roofed, the floor is paved and the containers are properly labeled. If spill, leak or are improperly handled, hazardous materials are a potential source of contamination.

Recommendation:

- ✓ Continue to use BMPs to ensure the proper handling and storage of hazardous materials.

4. **Aboveground Storage Tank (AST)** - There are two AST located within the IWPA of both wells. If managed improperly, Aboveground Storage Tanks can be a potential source of contamination due to leaks or spills of the chemicals they store.

Recommendations:

- ✓ Aboveground storage tanks in your IWPA should be located on an impermeable surface, and also contained in an area large enough to hold the complete liquid volume, should a spill occur.
- ✓ Upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices. Any modifications to the AST must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the wells' susceptibility to contamination. D & M Chu should review and adopt the following recommendations at the facility:

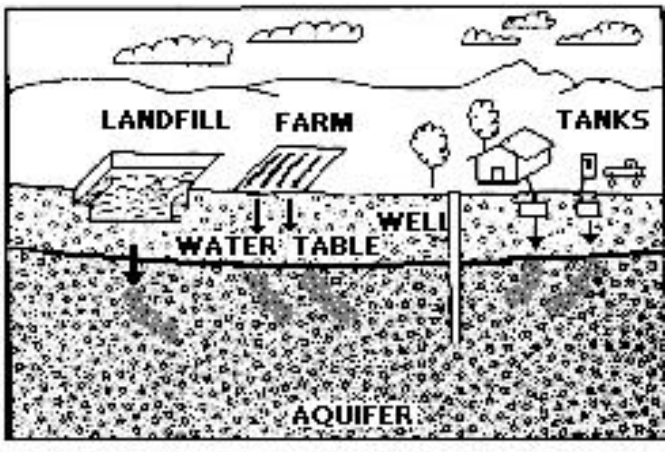

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Zone I:

- ✓ Consider wells relocation if Zone I threats cannot be mitigated
- ✓ If it's not feasible to purchase privately owned land within the Zone I at this time, consider a conservation restriction that would prohibit potentially threatening activities or a right of first refusal to purchase the property.
- ✓ Do not use or store pesticides, fertilizers or road salt within Zone I.

Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, and certified operator.
- ✓ Post drinking water protection area signs at key visibility locations.

For More Information:

Contact Josephine Yemoh-Ndi in DEP's Worcester Office at (508) 792-7650 x 5030 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on DEP's web site at: www.state.ma.us/dep/brp/dws.

Copies of this assessment have been provided to the water department and town boards. .

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at www.state.ma.us/dep/brp/dws/dwspubs.htm

Planning:

- ✓ Work with local officials in Boxboro, Harvard, and Littleton to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Factsheet
- Your Septic System Brochure

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix